various machines in existence. The Committee proposed afterwards to verify the statistics given in by this gentleman.

The subjects which these Commissions are investigating are of great interest and importance to the trade, and it is to be hoped that the gentlemen entrusted with the inquiries will be able to prosecute them to a satisfactory issue. The paper by Mr. F. Kohn on the production of alloys of iron and manganese gave rise to a discussion, in which it was asserted that the manufacture of spiegeleisen had at length become an established fact in connection with the iron trade of this country, the Ebbw Vale Company having recently succeeded in extracting that material from the spathic iron ores of the Brendon Hills. Considering that this company have devoted a long time to the solution of this important question, it is satisfactory to find that they have been fortunate in this matter. The results obtained by the Terre Noire Company in the production of a soft steel are very remarkable, as Sir W. Fairbairn testifies that in ductility this steel stands in the ratio of ·219 per unit of length to ·092 of the Bessemer steel manufactured at Barrow from hæmatite ore. The steel in question was made by the use of ferromanganese made by Mr. Henderson's process, and containing an average of 23 to 25 per cent. of metallic manganese. The pig iron is run directly from the blast furnace to the converters without mixing with other kinds of iron, and the rich ferromanganese is used instead of the ordinary spiegeleisen.

Mr. Walker read a communication on modern appliances for reversing rolling mills, which introduced a notice of the principal arrangements now adopted for securing reversing action in rolling iron and steel. This is a matter of great importance, and has engaged the attention of engineers for some time past. The principal systems are—First, by reversing motion of the ordinary locomotive type; and, secondly, by friction clutches. The latter plan was most particularly described. It was stated that the polls can be reversed at any speed, and the mills fitted up on this method are remarkably effective. Mr. Ferrie contributed a paper upon an improved form of blast furnace recently introduced into Scotland. This differs from the furnace in ordinary use by the addition of about 20ft. at the top, which is divided into four compartments, and the raw coal charged in at the top is coked in its passage down the vertical chambers. The practical results of the working of this furnace over a considerable period has been a saving of at least one ton of coal for each ton of iron produced. In the discussion it was maintained that the advantage derived by Mr. Ferrie from the alteration of his furnace were mainly due to increased height; but it was also advanced that with raw coal for fuel it would not be practicable as a rule to make furnaces 80ft. high work satisfactorily. Mr. Ferrie appears to have demonstrated that high furnaces using raw coal can be made to give as good results as are obtained in the more modern districts. Mr. Tate read a paper giving a very clear account of the distribution, extent, and value of the iron ores of Antrim, which are now coming into notice, and will doubtless very soon be extensively employed in the west coast and elsewhere in the manufacture of hæmatite iron. Mr. D. Forbes also read a paper on iron ore, his subject being a brief description of the central mining district of Sweden. He called attention to the immense deposits of iron ores of great purity that will soon be opened up by the construction of a railway which will give direct access to the North Sea, and will thus render it feasible to import the Swedish ores into this country. The discussion on the Sherman process was interesting, but showed pretty clearly that the practical men who had taken the matter up, and had investigated it thoroughly, had not been able to arrive at any satisfactory results from it. Considering the nature of the chemical substances applied in the treatment of the iron by this process, it was only natural that such negative results should be obtained.

We must not omit to mention the lecture by Prof. Roscoe on Wednesday evening on spectrum analysis in its relation to the manufacture of iron and steel. There was not very much to state with respect to recent discoveries in the application of spectrum analysis to the production of steel, but it was important that the trade should know exactly what they might, and what they might not, expect from this delicate method of chemical investigation. Prof. Roscoe, in a very able and lucid manner, laid before the members of the Institute all that is at present known about the subject. One discovery by Mr. Snelus is likely to lead to good results. He has found that by the aid of the spectroscope he can predict the exact length of time that a "blow" will last in the Bessemer converter, and he hopes to be able eventually to stop the operation at a time when a definite amount of carbon may be left in the molten iron, and thus the quantity of spiegeleisen required to produce steel of a given quality will be reduced.

The proceedings, on the whole, were of a thoroughly satisfactory character, and, considering the short time the Institute has been in existence, it seems highly probable that it will eventually occupy a position of much influence and importance.

NOTES

His Excellency the Lord Lieutenant of Ireland has been pleased to appoint Dr. R. O. Cunningham to the Professorship of Natural History in the Queen's College, Belfast. The newly-appointed Professor is well-known as an enthusiastic naturalist. The pleasant post of Professor to the most successful of the Queen's Colleges in Ireland is one that we are glad to see filled by the appointment of so estimable a man.

We rejoice to be able to announce that the following Scholarships have been established by Gonville and Caius College, Cambridge, and hope it will not be long before all the other Colleges follow so good an example:—A Scholarship in Natural Science, tenable for four years from Lady-day, 1871, and of value from 60*l.* to 20*l.*, according to the candidate's proficiency, will be awarded at this College in June next. The successful candidate will require to enter his name at this College forthwith, and to begin residence in October. There will be three distinct examinations, in any one (but in one only) of which the student may compete—namely, in (1) Chemistry and Experimental Physics; (2) Zoology, with Comparative Anatomy and Physiology; (3) Botany, with Vegetable Anatomy and Physiology. The examinations will be held on the 2nd of June. Candidates must send in their names, stating which subject they elect to be examined in, to Dr. Drosier, Gonville and Caius College, Cambridge, on or before the 15th of May, enclosing a certificate of good conduct from a graduate of one of the British Universities.

The vacancy in the curatorship of the Leeds Philosophical and Literary Society has been filled by the appointment of Mr. Louis C. Miall, curator to the Bradford Philosophical Society. Mr. Miall is already favourably known in Leeds, through the very interesting and successful lectures on Geology which he delivered at the Philosophical Hall last year, and he is at present engaged in the delivery of a course of lectures on Botany at the same place. He is the author of various papers and publications on Botany and Geology, more especially as affecting the West Riding. Mr. Miall's candidature was strongly supported by Profs. Owen, Huxley, and Rolleston; and the Leeds Philosophical Society may be congratulated on his appointment.

We are unable this week to give any report of scientific proceedings in Paris: during the civil conflict every scientific movement is paralysed. The sittings of the Academy are suspended; but should the siege be prolonged, they may probably be resumed at Versailles, although some of its members are detained in Paris by the Commune as hostages.

We are sorry to learn that the Government of Nova Scotia, in resorting to the retrenchment system, has withdrawn the small annual grant heretofore made to the Institute of Natural Science, the only scientific society that colony possesses; and, moreover, one which for the past eight years has struggled to maintain a position creditable to itself and the country in which it is established. Surely the trouble and expense of publishing, setting aside the gratuitous mental labour of those members who have furnished the interesting papers which together form the eight annual parts, comprising two volumes of over 1,000 pages, should have been considered by the authorities of the colony before they acted in such an illiberal spirit. We trust, nevertheless, to see the Institute still progress in its career of usefulness.

We have great pleasure in announcing that Mr. Julian Goldsmid, M.P. for Rochester, who is a Master of Arts in the University of London, has just made his University a handsome present of 1,000*l.*, to be paid in annual instalments distributed over ten years, towards the formation of a good classical library in the new building. The Senate have accepted the offer, with a hearty acknowledgment of its generosity; and a committee has already been appointed to begin the agreeable task of forming a classical library. We trust Mr. Goldsmid's generosity may be infectious. The *Spectator* suggests whether it is possible to secure for the University the late Prof. De Morgan's unique Mathematical Library, which probably contains the most curious collection of books on the history of mathematics to be found in England. The value of this collection is besides greatly enhanced by Mr. De Morgan's own numerous and characteristic annotations. Whether the library is to be disposed of or not, we do not at present know; but if it could be obtained, there would be a special fitness in securing it for the University of London, which would then have a really good start towards the formation of a fine classical and scientific library.

Mr. Elwes, of University College, London, and Mr. Jude, of King's College, London, have been elected to Natural Science Scholarships at Christ's College, Cambridge, of the respective values of 70*l.* and 50*l.* per annum.

We have to record another instance of American munificence towards Science. Vassar College has received a donation of 50,000 dollars to found a natural history professorship.

We have received the first number of the 4th volume of "Sirius," edited by Dr. R. Falb, which promises to keep its old reputation as an excellent astronomical journal. It is accompanied by an admirable map of the stars of the northern hemisphere down to the 4th magnitude, the variable and double stars being indicated at a glance.

Seventy years ago some domestic rabbits were introduced upon Sable Island, a small sandy islet lying about a hundred miles off the Nova Scotia coast, and being left alone and not crossed in breeding, they have entered their feral state in liveries of beautiful silver grey, with white collars, intimating some remote affinities with bygone races.

At the Natural History Society of Ireland, held on Wednesday, April 5th, R. P. Williams in the chair, Dr. A. W. Foot read a paper on "Irish Diptera." The list contained those species taken by him during the previous summer, and embraced sixty-five species belonging to thirty-nine genera. Mr. W. Andrews read a paper on the species of the genus Hymenophyllum met with in New Zealand. Some pretty sketches of scenery in New Zealand were exhibited by the author, who also laid on a table a number of illustrative dried specimens which had been communicated to him by friends in America.

On December 1 there was an earthquake at Tinnevelly in the Madras Presidency; and on the following day a slight earthquake was felt at Darjeeling, an English town in the Himalayas.

On the 9th February there was a very strong shock of earthquake at Illapel in Chile. On the 11th February a strong shock of earthquake was felt at Valparaiso in Chile about 4 A.M. It is worthy of note that both these earthquakes occurred simultaneously with freshets from the mountains.

On Twelfth Day an Indian woman of Cuzco in Peru, forty-five years of age, gave birth to a triplet of boys, one of whom survived. As this happened strangely enough on the day of the Three Kings, it excited the superstitions of the natives. The surviving boy was named Gaspar, after one of the kings.

Coal of excellent quality is said to have been discovered near the rich silver mines of Caracoles in Bolivia, about twelve miles from Calama.

In a recent number of the *Scientific American* are short descriptions and drawings of two useful inventions:—a Washing Shield, consisting of a corrugated shield or armour which protects the arm and at the same time forms an effective surface for rubbing the clothes; and an Anti-snoring device, consisting of a leather band placed over the head and chin, which effectually closes the mouth during sleep.

From the Thirteenth Annual Report of the East Kent Natural History Society we learn that that body is "in much the same condition as at the end of the preceding year." The library has been largely augmented; there has been but one excursion; several lectures have been given; and fortnightly evening meetings have been established. The Committee appointed to report upon the flora of the district seems to have made but little progress. The Rev. J. Mitchinson, D.C.L., is the President; and Mr. George Gulliver, F.R.S., Secretary.

The Malvern Naturalists' Field Club has issued in a neat volume its Transactions for 1853-70. It contains a large number of papers mainly illustrative of the natural history of the district, including catalogues of local birds, mollusca, lepidoptera, and fungi, with sketches of the geology of the Malvern Hills, and observations on the meteorology of Malvern. There is also an interesting sketch of the proceedings of the Society from its commencement in 1853, to the close of 1868, by the Rev. W. J. Symonds, F.G.S., President; and a long paper on "The Forest and Chace of Malvern: its Ancient and Present State; with Notices of the most remarkable old Trees remaining within its Confines," by Mr. Edwin Lees. This is illustrated by several well-executed engravings of some of the trees referred to; but we can commend neither the illustrations nor the matter of the same author's paper "On the Forms and Persistency of Arboreal Fungi." The volume, however, on the whole, is likely to be useful to the members of the club, and is a creditable production.

The more general use of buffaloes for the purpose of moving timber in some of the forests of India has been recommended by the conservators of those forests which are situate on comparatively level or uneven ground as being more practicable and economical than elephants. It is found that there is great difficulty in some parts in obtaining sufficient fodder for the elephants, one of the consequences of which is that their health suffers, and this, when taken with the high price paid for them, causes considerable loss. Owing to the size and weight of many of the logs, however, which often lie in difficult positions, a few elephants are necessary; but in those forests where low trucks and carts can be used, it is said that a few pairs of buffaloes will do more work, and can be kept with less risk than elephants.

THERE is a plant in New Granada which, if our ink-makers could only grow in sufficient quantity in this country, would be a fortune to them. The plant in question (*Coriaria thymifolia*) is commonly known as the ink plant, and it is simply the juice that is used without any preparation. Its properties seem, according to a tradition in the country, to have been discovered during the Spanish administration. A number of written documents destined for the mother country were embarked in a vessel, and transmitted round the Cape, the voyage was unusually tempestuous, and the documents got wetted with salt water, those written with common ink became nearly illegible, whereas those written with "chanchi" (the name of the juice) remained unaltered. A decree was therefore issued that all government communications should in future be written with the vegetable juice. The ink is of a reddish colour when freshly written, becoming perfectly black after a few hours, and it has the recommendation of not corroding a steel pen so readily as ordinary ink.

A NEW *Wellingtonia gigantea*, or "big tree," forty feet and four inches in diameter, has been discovered lately near Visalia, in Southern California. This is thicker by seven feet than any other that has yet been found. A section of one of the "big trees" is now exhibited in Cincinnati, which is seventy-six feet in circumference and fourteen feet high; and, standing on the floor of the hall, it gives one a perfectly clear idea of the enormous size of the tree from which it was taken. The section was cut last year in the Mariposa grove, about two hundred and fifty miles south-east of San Francisco, and far up the western slope of the Sierra Nevada mountains. It was divided and hauled a hundred and forty miles to Stockton, on three waggons by seventeen yoke of cattle.

UNDER the title of "British Pharmacology" Mr. W. W. Stoddart is publishing in the *Pharmaceutical Journal* some interesting papers upon some of the British plants which are employed in medicine. Speaking of the presence of allyl in the horseradish, he says, "It is a very singular fact that the cruciferous plants produce compounds of sulphur and allyl that are so well known in the genus Allium, plants so dissimilar in habit and construction as to be in both exogenous and endogenous divisions of the vegetable kingdom. In every part of the world the garlic flavour seems to be a favourite. The Israelites of old regretted the loss of their leeks and onions. The Englishman likes the addition of a shallot, mustard, or horse-radish to his beefsteak. The Spaniard selects the onion, and the Asiatic assafœtida. Even the Brazilian has chosen the petiveria and sequieria, both of which have an alliaceous flavour. The whole of these owe their smell and taste to allyl, which in the onion tribe exists as a sulphide."

A DEPOSIT of alum of considerable magnitude has been found in the Kulhu Valley, in Madras. It was first found by shepherds. As a rule, the headmen of villages prefer even now not to disclose mineral discoveries.

MR. BLANFORD, of the Indian Geological Department, has been specially appointed to proceed to Damagoodiam in the Central Provinces to examine and report on the coal discovered by Colonel Henry.

FAVOURABLE reports of the Cinchona cultivation in the West Indies continue to be received. We learn that in the Jamaica plantations the trees are seeding plentifully, and that about 100,000 seeds of *C. calisaya* are now ripening. There are also 40,000 seedling plants of *C. succirubra* raised from Jamaica seed. One hundred acres of land over and above the hundred acres already established, have lately been prepared for planting in the coming spring, and there appears every prospect of a few hundred more acres being soon prepared to be put under similar cultivation.

FROM Asia Minor we get no scientific records of weather, but in their absence some information of a meteorological character is useful. The winter in Smyrna has been very mild, accompanied with heavy rains, but apricots had shown fruit. On the 29th the rainy season culminated in a flood of the river Metes, inundating the city of Smyrna in a way not known for more than half a century, while the great river Hermus also overflowed. Soon after the weather changed to a sharp frost, which will cause destruction among orange and fruit trees. It will be observed the weather is the reverse of ours.

THE Government of Madras has appointed four scientific gentlemen to annalyse the water of that Presidency.

DR. HERMAN CREDNER, of Leipzig, in a forthcoming number of Petermann's *Mittheilungen*, presents a valuable report upon the geology and mineralogy of the Alleghany system of the United States, accompanied by a detailed map of the region.

NEWSPAPERS do indeed bring intelligence to men of Science, but they bring error to the vulgar. We had made a note from an Indian paper of a hen which had hatched a chicken perfectly resembling a young kid, and created consternation in a whole kingdom concerned to know what misfortunes are portended. We are the more inclined to notice this valuable contribution to natural science, because now we find in a Smyrna paper, *La Réforme*, intelligence that the island of Crete is now busied with the fact, "well authenticated," that a woman in the village of Melikos has been brought to bed of two monsters having the form of serpents. Although they only lived two hours, so that the medical men of the island could not, if they had the requisite capacity, make any observations, the "fact" may cost the unlucky Turkish Government another insurrection. Cock-and-bull stories may sometimes be dismissed with contempt, but want of instruction in natural science may in this country and some others be of more serious moment; for ignorance is seldom bliss, but one of the great promoters of evil. Knowledge of natural science may prevent national discouragement in some cases, and in others stifle the spread of conspiracy and rebellion. The Aurora Borealis has in the east been connected with the Menzikoff note and been commented on by it.

A HANDSOME consignment of silkworms' eggs has arrived at Sydney with the appliances of a "magnanarie" from Japan, which may prove the foundation of a branch of Industry in New South Wales that shall vie with the production of wool and excel that of sugar. The Acclimatisation and Agricultural Societies have been directing their attention to the subject, and some of the best varieties of silkworm have been acclimatised by Mr. Charles Brady. In June last the Acclimatisation Society wrote to Sir Henry Parkes at Yokohama for specimens of the finest varieties of worms, with specimens of silk, cocoons, &c., and a complete set of sericultural implements. With kind alacrity he set to work at once to oblige the society, and so far interested the ex-Minister of the Interior, Prince Daté, on the subject as to receive from him gratuitously nearly all that was wanted.

A LONG and interesting letter by Mr. T. J. Monk, on the Breeding and Preservation of the Woodcock in East Sussex, appears in the *Field* of Feb. 25. The writer gives an account of the occurrence of this bird in seven districts of East Sussex, comprising twenty-one parishes, in all of which woodcocks have nested, and are nesting in greater or less numbers every year. On an average, Mr. Monk considers that from a hundred and fifty to two hundred nests might be found in these districts in most years; and states his opinion that, if never shot at after Feb. 1, and if the coverts were kept as quiet and undisturbed as possible during the breeding season, we might hope for a still further increase in the number of young birds.